ABSTRACT OF THE DISCLOSURE

A method of converging a step size control for an adaptive filter of a communication channel is disclosed. This method has the steps of: (1) initializing a nominal step size value and a penalty point value; (2) combining the nominal step size value and the penalty point value to generate a step size value; and (3) dynamically changing the step size value in response to a characteristic measure of a quality of the communication channel. With this method, the step size value is changed by adjusting the nominal step size value, the penalty point value, or both the nominal step size value and the penalty point value. In a preferred embodiment of the invention, the step size value is decreased by adjusting the penalty point value when: (1) a tone originating from the far end of the communication channel is detected, to prevent the adaptive filter from diverging; (2) full convergence is achieved; (3) a power level of a residual error signal, P_e, is less than -60 dBm0 or of a far-end channel signal, P_x, is less than -45 dBm0; (4) a level of the channel's near-end background noise is high; and (5) weak double-talk in the communication channel is detected. The step size value is decreased by adjusting the nominal step size value when an achieved initial combined loss is about 15 dB or greater. On the other hand, the step size value is reset upon an adaptive filter reset that may be triggered by divergence. Additionally, the step size value is reinitialized at the beginning of every forty sample block period, which is 5 ms when an 8 kHz sampling rate is used.